CLAIMS

What is claimed is:

1. A method for immunizing an individual against infection by vaccinia and/or variola virus, the method comprising inducing an immune response against a polypeptide comprising peptide 74A.

2. The method of Claim 1, wherein the polypeptide is selected from the group consisting of MVA189R, Copenhagen B22R, Copenhagen C16L, Bangladesh-1975 D2L, India-1967 D1L, Garcia-1966 B1L, Brighton Red V212 or Zaire-96-I-16 N1R.

3. The method of Claim 1, further comprising a second polypeptide comprising peptide 165.

4. The method of Claim 1, wherein the immune response is induced by administering a product selected from the group consisting of a polypeptide, a naked nucleic acid molecule encoding the peptide or a nucleic acid molecule, encoding the peptide, in a suitable vector.

5. A method for immunizing an individual against infection by vaccinia and/or variola virus, the method comprising inducing an immune response against a polypeptide comprising peptide 165.

6. The method of Claim 5, wherein the polypeptide is selected from the group consisting of MVA018L, Copenhagen C7L, Tian Tan TC7L, Bangladesh-1975

D11L, India-1967 D8L, Garcia-1966 B14L, Brighton Red V028 or Zaire-96-I-16 D10L.

7. The method of Claim 5, further comprising a second polypeptide comprising peptide 74A

8. The method of Claim 5, wherein the immune response is induced by administering a product selected from the group consisting of a polypeptide, a naked nucleic acid molecule encoding the peptide or a nucleic acid molecule, encoding the peptide, in a suitable vector.

9. A method for immunizing an individual against infection by vaccinia and/or variola virus, the method comprising inducing an immune response against a polypeptide comprising peptide 74A, immunogenic fragments or mutants thereof.

10. The method of Claim 9, wherein the polypeptide is selected from the group consisting of MVA189R, Copenhagen B22R, Copenhagen C16L, Bangladesh-1975 D2L, India-1967 D1L, Garcia-1966 B1L, Brighton Red V212 or Zaire-96-I-16 N1R.

11. The method of Claim 9, further comprising a second polypeptide comprising peptide 165, immunogenic fragments or mutants thereof.

12. The method of Claim 9, wherein the immune response is induced by administering a product selected from the group consisting of a polypeptide, a naked nucleic acid molecule encoding the peptide or a nucleic acid molecule, encoding the peptide, in a suitable vector.

13. The method of Claim 9, wherein 1 to about 4 amino acids can be substituted without essentially detracting from the immunological properties of peptide 74A.

14. A method for immunizing an individual against infection by vaccinia and/or variola virus, the method comprising inducing an immune response against a polypeptide comprising peptide 165, immunogenic fragments or mutants thereof.

15. The method of Claim 14, wherein the polypeptide is selected from the group consisting of MVA018L, Copenhagen C7L, Tian Tan TC7L, Bangladesh-1975 D11L, India-1967 D8L, Garcia-1966 B14L, Brighton Red V028 or Zaire-96-I-16 D10L.

16. The method of Claim 14, further comprising a second polypeptide comprising peptide 74A, immunogenic fragments or mutants thereof.

17. The method of Claim 14, wherein the immune response is induced by administering a product selected from the group consisting of a polypeptide, a naked nucleic acid molecule encoding the peptide or a nucleic acid molecule, encoding the peptide, in a suitable vector.

18. The method of Claim 14, wherein 1 to about 4 amino acids can be substituted without essentially detracting from the immunological properties of peptide 165.

19. A method of identifying the presence of vaccinia or variola virus in a sample comprising determining whether T cells present in the sample become activated in the presence of a polypeptide selected from the group consisting of: peptide 74A (SEQ ID NO: 1), peptide 165 (SEQ ID N O: 2), an immunogenic mutant or

fragment thereof and a combination thereof, wherein if the T cells become activated, then vaccinia or variola virus is present in the sample.

20. The method of Claim 19 wherein whether the T cells present in the sample become activated is determined using an assay selected from the group consisting of: a cytokine assay, a flow cytometry assay and a limiting dilution assay.

21. The method of Claim 20 wherein the assay is an ELISPOT assay or a tetramer staining assay.

22. The method of Claim 19 wherein the sample is selected from the group consisting of: blood, lymph and tissue.

23. The method of Claim 22 wherein the sample is a peripheral blood mononuclear cell sample.

24. A method of determining whether an individual has been infected with vaccinia or variola virus comprising determining whether the individual's T cells become activated in the presence of polypeptide selected from the group consisting of: peptide 74A (SEQ ID NO: 1), peptide 165 (SEQ ID N O: 2), an immunogenic mutant or fragment thereof and a combination thereof, and wherein if the individual's T cells become activated in the presence of the peptide, then the individual has been infected with vaccinia or variola virus.

25. The method of Claim 24 wherein the individual's T cells are present in a sample, and the sample is selected from the group consisting of: blood, lymph and tissue.

26. The method of Claim 25 wherein the sample is a peripheral blood mononuclear cell sample.

27. The method of Claim24 wherein whether the whether the individual's T cells become activated is determined using an assay selected from the group consisting of: a cytokine assay, a flow cytometry assay and a limiting dilution assay.

28. The method of Claim 27 wherein the assay is an ELISPOT assay or a tetramer staining assay.

29. A method of monitoring the effectiveness of a vaccinia vaccine in an individual who has been administered the vaccinia vaccine, comprising determining whether the individual's T cells become activated in the presence of a polypeptide selected from the group consisting of: peptide 74A (SEQ ID NO: 1), peptide 165 (SEQ ID N O: 2), an immunogenic mutant or fragment thereof and a combination thereof, wherein if the individual's T cells become activated, then the vaccinia virus is effective in the individual.

30. The method of Claim 29 wherein the individual's T cells of the individual are present in a sample, and the sample is selected from the group consisting of: blood, lymph and tissue.

31. The method of Claim 30 wherein the sample is a peripheral blood mononuclear cell sample.

32. The method of Claim 29 wherein whether the whether the individual's T cells become activated is determined using an assay selected from the group

consisting of: a cytokine assay, a flow cytometry assay and a limiting dilution assay.

33. The method of Claim 32 wherein whether the individual's T cells become activated is determined using an ELISPOT assay or a tetramer staining assay.

34. The method of Claim 29 wherein the vaccinia vaccine is a cancer vaccine.